

## Chromosome numbers of Western Australian Apiaceae

by G. J. Keighery

Kings Park and Botanic Garden West Perth, W.A. 6005.

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### Abstract

Chromosome numbers for 37 species of Apiaceae are given, including new generic records for *Chlaenosciadium*, *Homalosciadium*, *Pentapeltis*, *Platysace*, *Schoenolaena* and *Xanthosia*.

### Introduction

The Apiaceae (Umbelliferae), although one of the largest dicotyledon families is sparsely represented in Western Australia, where approximately 90 species occur. These species are often small herbs, and have been poorly collected and are generally little studied. This paper presents chromosome number determinations for 92 populations of 37 species of the family. Studies on the cytology of the family are continuing, and will be extended to cover Eastern Australia during the next phase.

Counts were made on pollen mother cells in all cases. Buds were fixed in Bradley's (1948) chloroform-acetic acid-alcoholic fixative, then stained in Snow's (1963) acid-alcoholic carmine for 4-7 days and squashed in 45% acetic acid. Voucher specimens for all counts are lodged in PERTH or Kings Park.

### Results and Discussion

Details of the new chromosome number determinations are given in Table 1. Previous counts for the other genera are given in Table 2. The counts for

Table 1

New chromosome number determinations for Western Australian apiaceae

Taxon	n	Locality	Voucher
<i>Actinotus glomeratus</i> Benth.	10	10 km N of Walpole	GK 676
	10	Crestwood, Perth	GK 1313
	10	13 km S of Bunbury	GK 103
<i>A. humilis</i> (F. Muell. et Tate) Domin.	10	Karridale	GK 1384
	10	Newdegate to Lake King	GK 359
	10	80 km E of Lake King	GK 3422
<i>A. leucocephalus</i> Benth.	10	Cannington	GK s.n.
	10	Mimegarra Rd, Cataby	GK 2095
	10	Cockleshell Gully	GK 579
(golden anther form)	10	Scott River	GK 598
<i>A. omnifertilis</i> F. Muell. ex Benth.	10	cultivated	no voucher
<i>A. superbus</i> O. H. Sargent	10	20 km E of Esperance	GK 453
<i>Apium annuum</i> P. S. Short	11	Augusta	GK 1884
<i>A. prostratum</i> Labill. ex Vent.	11	Guildford	GK 1492
	11	Molloy Isld, Augusta	G.K. s.n.
<i>Chlaenosciadium gardneri</i> Norman	10	Tarin Rock	GK 334
	10	21 km N of Narebeen	GK 448
<i>Daucus glochidiatus</i> (Labill.) Fisch., C. A. Meyer et Ave-Lall.	10	Newdegate to Lake King	GK 3527
	22	1 km N of Lake Cave	GK 348
	22	Mt Holland	GK 1088
	22	Yanchep	GK 2129
	22	Seamore Downs Station	GK 542
<i>Eryngium pinnatifidum</i> Bunge	22	Queen Victoria Rocks	GK 386
	14	Trigg Island	GK s.n.
<i>E. pinnatifidum</i> "var"	14	67 km E of Perth on York Road	GK 486
<i>E. sp.</i>	14	Cape Leeuwin	GK 1885
<i>Pentapeltis peltigera</i> (Hook.) Bunge	5	1 km W of Dell, Mundaring	GK 2904
	5	Brockman Highway, Augusta	GK s.n.
<i>Platysace</i> sp.	8	32 km N of Walpole	GK 96
<i>Schoenolaena juncea</i> Bunge	5	Cannington	GK 4004
	5	Yornup	GK 990
	5	Molloy Isld. Rd,	GK 1551
	5	8 km E of Porongorups	GK 349
	22	John Rate Lookout, Walpole	GK 1413
<i>S. tenuior</i> Bunge	22	10 km W of Pemberton	GK 1414
	22	41 km E of Augusta	GK 346
	22	Denmark	GK 1412
	22	Nornalup	GK 2153
	22	15 km N of Pemberton	GK 2154
<i>Trachymene anisocarpa</i> (Turcz.) B. L. Burtt.	22		

Table 1—continued

Taxon	n	Locality	Voucher
<i>T. bialata</i> (Domin.) B. L. Burtt.	11	242 km N of Seemore Downs Stn. Great Victoria Desert	GK 552
<i>T. caerulea</i> Grah.	11	Rottneest Island	GK s.n.
	11	Garden Island	GK s.n.
	11	City Beach	GK s.n.
	11	11 km S of Mandurah	GK 2198
<i>T. caerulea</i> var. <i>leucopetala</i> F. Muell.	11	Kalbarri	Young 485
<i>T. croniniana</i> F. Muell.	11	7 km W of Forrestiana	GK 1661
	11	45 km E of Lake King	GK 435
	11	Newdegate to Lake King	GK 358
	11	10 km N of Mt Ridley	GK 417
	11	100 km E of Lake King	GK 409
<i>T. aff. croniniana</i>	11	117 km W of Balladonia	GK 1719
<i>T. glaucifolia</i> (F. Muell.) Benth.	11	22 km S of Laverton	GK 507
	11	43 km E of Laverton	GK 523
<i>T. oleracea</i> (Domin.) B. L. Burtt.	11	Python Pool	GK 772
<i>T. pilosa</i> Sm.	20	Salmon Beach, Esperance	GK 493
	20	Ruabon	GK 2177
	20	Welshpool Road, Perth	GK 2053
<i>T. sp. I</i>	11	19 km W of Meekatharra	Del 74886
<i>T. sp. I</i>	11	Pharoah's Well	Demarz 3841
<i>T. sp. II</i>	11	Ruabon	GK 600
<i>T. sp. II</i>	11	Darlington	GK s.n.
<i>Xanthosia atkinsoniana</i> F. Muell.	10	Lake Cave, Augusta	GK 345
	10	13 km N of Manjimup	GK 923
	10	Darlington	GK 2890
<i>X. candida</i> (Benth.) Steud. ex Bunge.	10	10 km N of Walpole	GK 678
	10	Kojonup area	GK 448
	10	7 km W of Toodyay	GK 1050
	10	2 km S of Witchcliffe	GK 687
	10	Yoongarillup	GK 212
<i>X. ciliata</i> Hook.	10	7 km W of Toodyay	GK 1051
<i>X. aff. ciliata</i>	10	Abbey, Stirling Range	GK 1143
<i>X. fruticulosa</i> Benth	10	20 km S.E. Eneabba	GK 587
<i>X. hedrifolia</i> Benth.	10	18 km S of Busselton	GK 1386
<i>X. huegelii</i> (Benth.) Steud.	10	Cannington	GK 2102
	10	Karridale	GK 2165
	10	38 km S of Nannup	GK 2166
<i>X. huegelii</i> ssp. nov.	10	170 km N of Perth on Brand Highway	GK 97
	10	Eneabba	GK 1338
<i>X. pusilla</i> Bunge	20	46 km W of Ravensthorpe	GK 104
	20	Nannup	GK s.n.
	20	Mt Lofty Ranges, Adelaide	GK 2248
	20	Cape Le Grand	GK 653
	20	32 km N of Walpole	GK 81
	20	Inlet River	GK 351
	20	24 km S of Manjimup	GK 78
<i>X. rotundifolia</i> DC.	10	Gull Rock, Albany	GK 2697
var. <i>rotundifolia</i>	10	Mt Hassell, Stirlings	GK 443
<i>X. rotundifolia</i> DC.	10	Chester Pass Road, Stirlings	GK 444
var. <i>hypoleuca</i> Diels.	10	4 km N of Cockleshell Gully	GK 482
<i>X. tomentosa</i> George	10	8 km E of North Bullsbrook	GK 2096
<i>X. sp. I</i>	10	Hostellers, Stirling Range	GK 1123
<i>X. sp. II</i>	10		

Table 2

Previously recorded chromosome numbers for Apiaceae of the Australasian region

Species	n	2n	Reference	Area
<i>Trachymene adenoides</i> Buwalda	22		Constance <i>et al.</i> (1971)	Papua
<i>Trachymene anisocarpa</i> (Turcz.) B. L. Burtt.	66		Constance <i>et al.</i> (1971)	cultivated
<i>Trachymene australis</i> Benth = <i>anisocarpa</i> (Turcz.) B. L. Burtt.		44	Wanscher (1933)	Australia
<i>Trachymene arfakensis</i> (Gibbs) Buwalda	22		Constance <i>et al.</i> (1971)	New Guinea
<i>Trachymene caerulea</i> Grah.		22	Wanscher (1933)	Australia
<i>Trachymene caerulea</i> Grah.	11		Constance and Bell (1960)	cultivated
<i>Trachymene cyantha</i> D. E. Boyland	11		Boyland (1972)	Queensland
<i>Trachymene humilis</i> Benth.		22	Wanscher (1933)	Australia
<i>Trachymene saniculaefolia</i> Staff.	44		Constance <i>et al.</i> (1971)	Borneo
<i>Trachymene saniculaefolia</i> Staff.		44	Borgman (1964)	Mt. Wilhelm New Guinea
<i>Trachymene tripartita</i> Hoogl.		44	Borgman (1963)	Mt. Wilhelm New Guinea
<i>Actinotus helianthii</i> Labill.		20	Smith-White (1955)	South East. Australia
<i>Apium annuum</i> P. S. Short	11		Short (1979)	South Australia
<i>Apium prostratum</i> Labill.		22	Short (1979)	Australia

the genera *Clilaenosciadium*, *Homalosciadium*, *Pentapeltis*, *Platysace*, *Schoenolaena* and *Xanthosia* are believed to be new generic records.

*Actinotus* in Western Australia is uniformly  $n = 10$ , supporting Smith-White's (1955) count on the Eastern *A. helianthii*. Moore (1971) however, cites *Actinotus* as  $n = 20$ , and states the genus is a paleopolyploid. This is obviously incorrect, as there is no current evidence of polyploidy in the genus.

*Xanthosia*, *Clilaenosciadium*, *Actinotus*, *Pentapeltis* and *Schoenolaena* all appear closely related on vegetative and floral morphology. The finding of  $n = 10$  for *Actinotus*, *Clilaenosciadium* and *Xanthosia* supports this association, while the records of  $n = 5$  (very large chromosomes over twice the size of *Xanthosia* in *Pentapeltis* and *Schoenolaena* chromosomes) supports their segregation from *Xanthosia* s.s., where Bentham (1867) had placed them.

The monotypic genus *Homalosciadium* has  $n = 12$ , which provides evidence for a close relationship to *Hydrocotyle* ( $n = 8, 9, 10, 11, 12$ ; Moore 1971) in which it was once placed.

*Platysace* with  $n = 8$  appears cytologically very distinct from *Trachymene* ( $n = 11$ ), within which several species were once placed. Further studies are needed on this large genus, which has proved cytologically extremely difficult.

*Trachymene* is relatively uniform on  $n = 11$ , with extensive polyploidy being reported elsewhere in the perennial species (Table 2). A small degree of aneuploidy ( $n = 20$  in *Trachymene pilosa*) has been found.

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